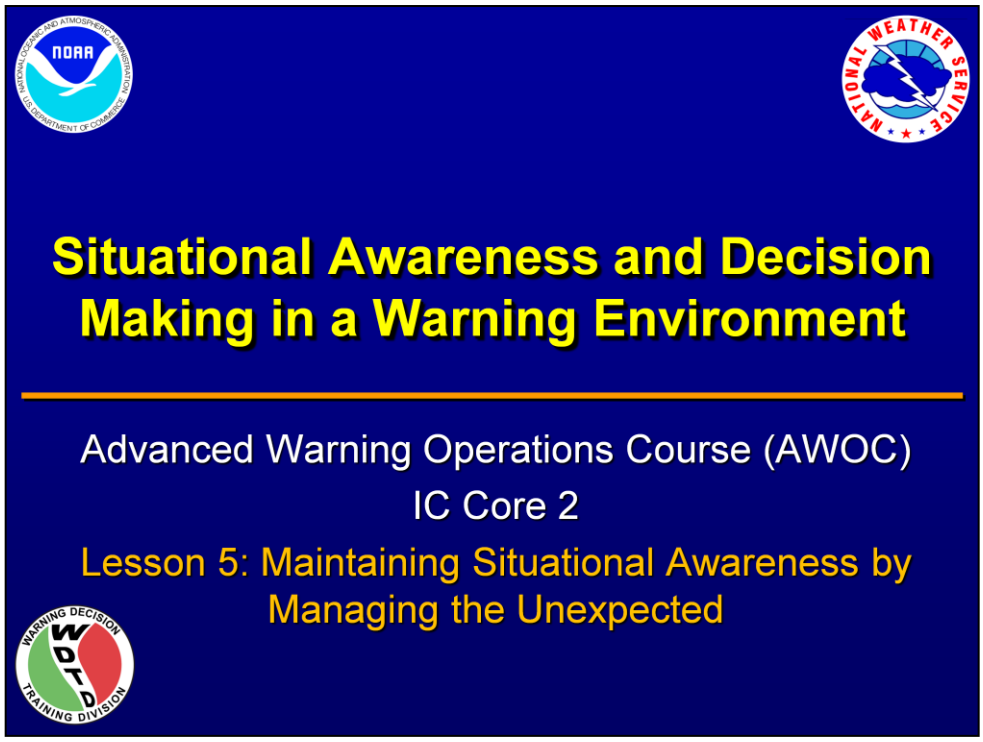
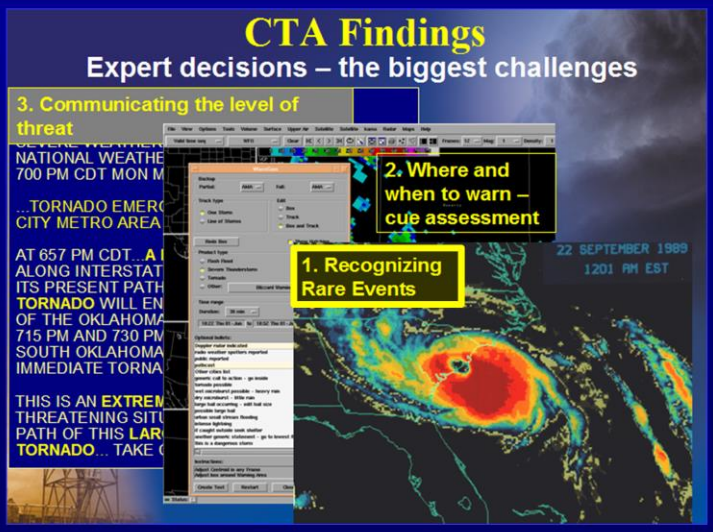


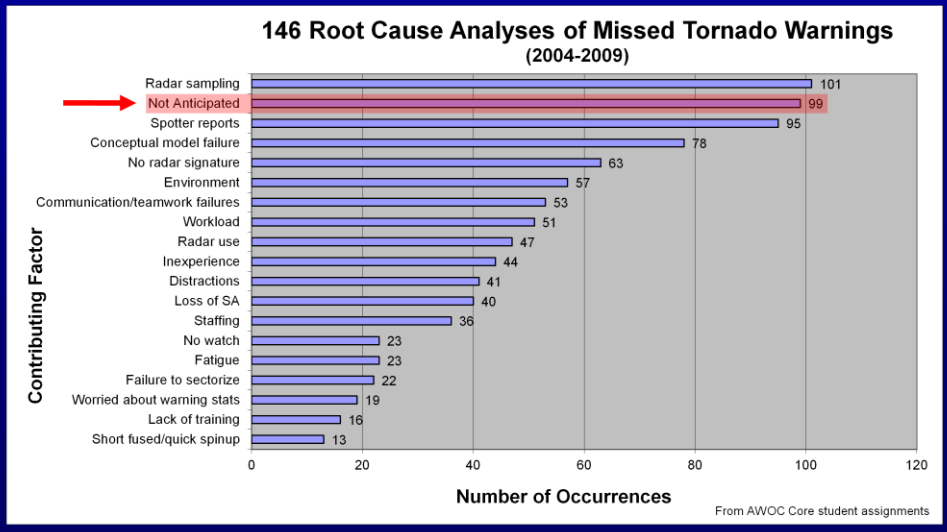
Welcome to AWOC IC Core 2, Lesson 5: Maintaining Situational Awareness by Managing the Unexpected. This lesson will discuss how we can maintain situational awareness at one of our most challenging times…when the unexpected happens.

Challenges with the Unexpected

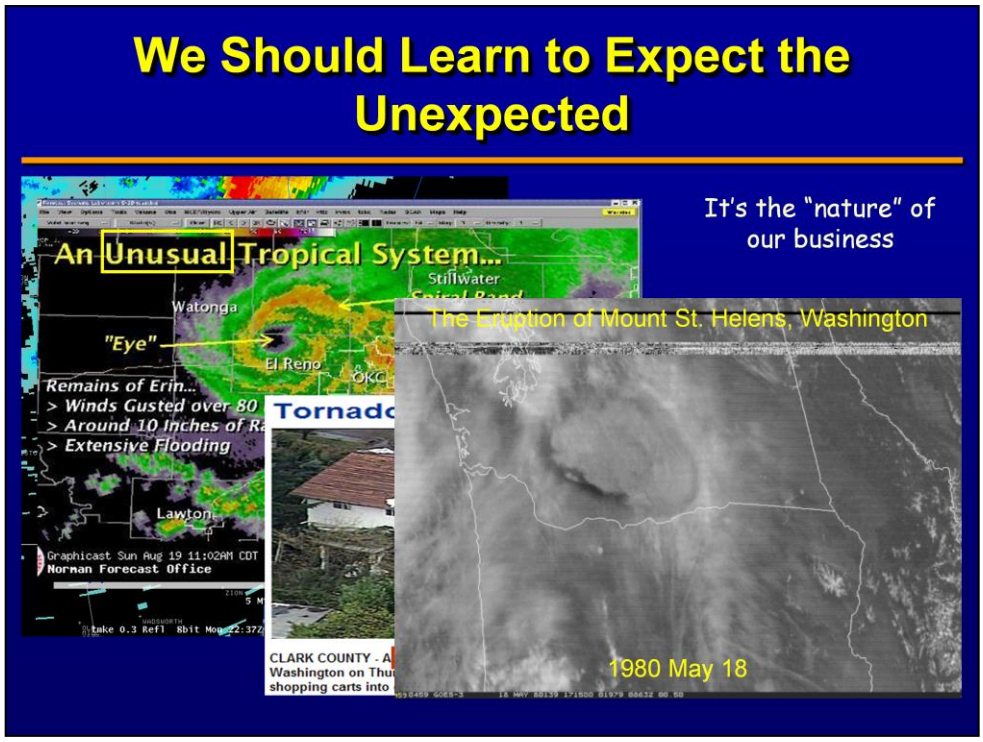


A cognitive task analysis of National Weather Service expert warning forecasters revealed “recognizing rare events” as one of their three biggest challenges. This is because a rare event is usually unexpected because it begins with invalid expectations.

Root Cause Analyses of Missed Tornado Warnings



Here is an example of how invalid expectations can negatively impact a National Weather Service Forecast Office. This chart reveals the results from 146 root cause analyses of missed tornado warnings. Note that “Not Anticipated” was the second most common contributing factor. Invalid expectations can lead to missed warnings.



The business of forecasting weather is fraught with unexpected events. Whether it's a tornado in January with snow on the ground in the upper Midwest, a tropical depression re-intensifying into a tropical storm over the Great Plains, a tornado in the Pacific Northwest, or a volcanic eruption, we should learn to expect the unexpected. It's the "nature" of our business. But doing so can be a challenge. Fortunately, there is hope.

Overview

- How to prepare for the unexpected
- The danger of invalid expectations
- The adverse effects of overconfidence
- Two practices that can help you notice and respond promptly to unexpected events
- Highly Reliability Organization (HRO)
  - It's environment
  - Five principles responsible for creating mindful infrastructure
  - Strategies to instill principles into an organization's culture

This lesson will provide you with strategies that can help you and your office maintain your situational awareness by managing the unexpected. We'll begin with a discussion of how to prepare for the unexpected, followed by the danger of invalid expectations, and the adverse effects of overconfidence. We'll discuss two practices that can help you notice and respond promptly to unexpected events. We'll identify what a Highly Reliability Organization (HRO) is, the environment that it operates in, the five principles of HROs that are responsible for creating a mindful infrastructure, and strategies to instill these principles into an organization's culture.

Objectives

1. Identify what NWS Warning Forecasters say is the #1 key to a successful warning event
2. Identify adverse affects of overconfidence
3. Identify the two practices that can help you notice and respond promptly to unexpected events
4. Identify attributes of the operational environment of a Highly Reliable Organization
5. Identify the five principles of a Highly Reliable Organization that are responsible for creating a mindful infrastructure
6. Given a Highly Reliable Organization principle, identify strategies to instill it into an organization's culture

Here are the objectives we will address in this lesson. Please take a moment to read them and then advance to the next slide when ready.

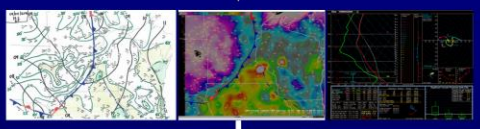
Challenges with the Unexpected

- An unexpected event forces us to update our expectations.
- We must update our situational awareness
  - Level 1: Assess
  - Level 2: Comprehend
  - Level 3: Project
- In a timely manner we must:
  - Determine the proper action
  - Be equipped to take that action
  - Convince others that action is necessary

An unexpected event is a big challenge because it forces us to update our expectations. We must consistently update our situational awareness by assessing what information is being given to us, making sure we comprehend that information and what it means, and then thinking ahead to understand the consequences of any new information we have received. Finally, in a timely manner for maximum effectiveness, we must determine the proper action, be equipped to take that action, and, sometimes, convince others that action is necessary.

How to Prepare for the Unexpected:
Formulate Valid Expectations

- Valid expectations can shorten the time to take proper actions.
- NWS forecasters say their #1 key to a successful warning event is to formulate valid expectations by having a good understanding of the storm environment.
  - Enables the warning team to anticipate the type of severe weather



Hazard	Tornadoes	EF2+ Tornadoes	Severe Wind	65 kt+ Wind	Severe Hail	2"+ Hail	Flash Flooding
Likelihood	Moderate	Low	Moderate	Low	High	Moderate	Very Low

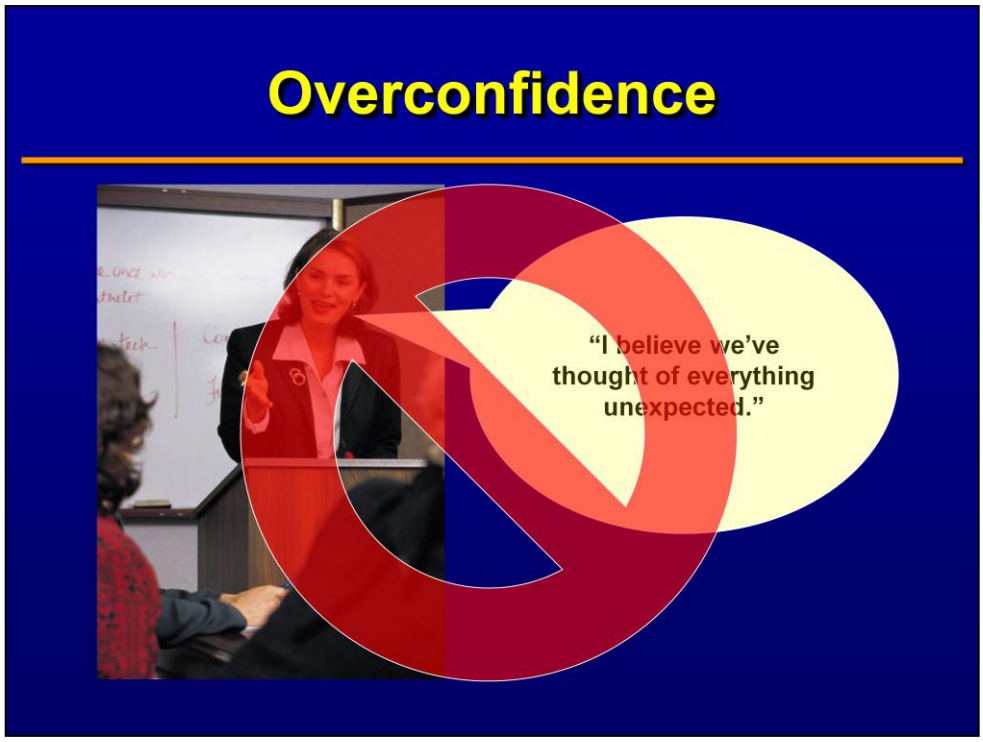
A good way to prepare for the unexpected is to formulate valid expectations because it can shorten the time necessary to take the correct actions. In surveys, NWS warning forecasters say their #1 key to a successful warning event is to formulate valid expectations by having a good understanding of the storm environment. This enables the warning operations team members to anticipate the type of severe weather that is expected (or at least possible) and issue the proper products more quickly.

The Danger of Invalid Expectations

- Invalid expectations can lengthen time to take the proper actions when the unexpected occurs.
- We assume our beliefs and theories are correct

📖 **Confirmation Bias (*also called* myside bias) –** The tendency to interpret new evidence as confirmation of one's existing beliefs or theories.

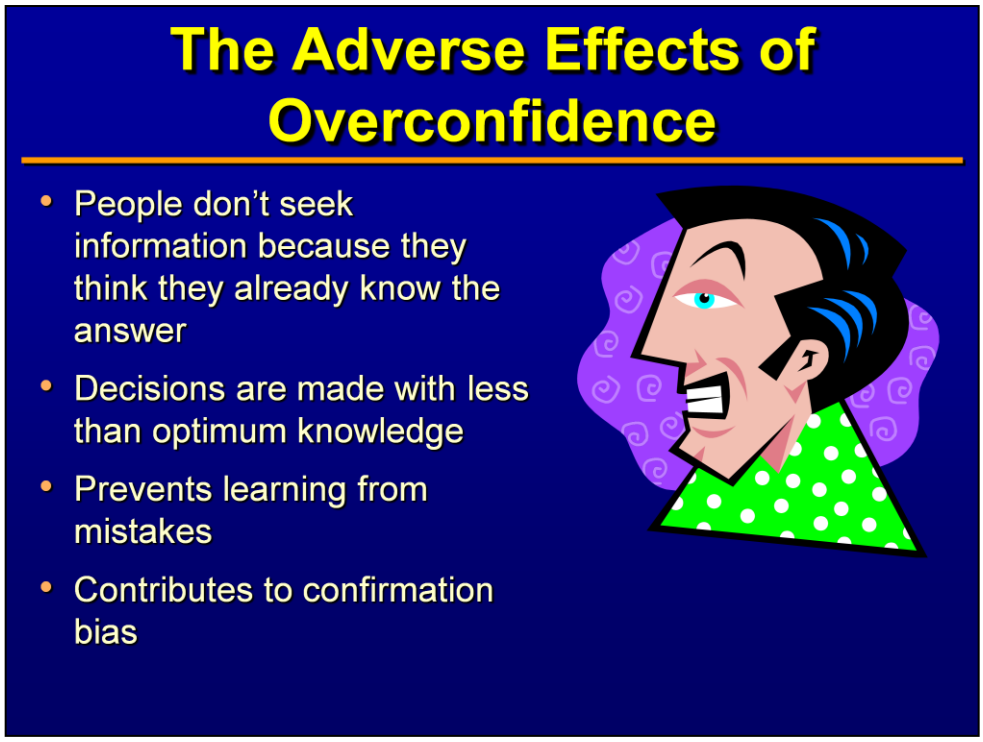
In contrast, invalid expectations can lengthen the time necessary to take the proper actions when the unexpected occurs. It's human nature to assume our beliefs and theories are correct, interpreting new evidence as confirmation; ignoring, minimizing, or dismissing facts to the contrary. This tendency to interpret new evidence as confirmation of one's existing beliefs or theories is called "confirmation bias." It's what can happen once we make up our mind, whether it's about our political choices, our favorite sports team, or our weather forecast. All that denial wastes valuable time which should be spent updating our situational awareness and taking appropriate actions.



Confirmation bias may be a sign of overconfidence.

Self-confidence has many positive benefits. It can help you tackle life's challenges, manage your fears, and maintain a positive mental attitude. But, **overconfidence** can lead to problems.

This project manager proudly states "I believe we've thought of everything unexpected." So what's wrong with her statement? It's a good idea to imagine what could go wrong and have contingencies. Once you decide that you have **all** possibilities covered, you stop looking for evidence to the contrary. You get complacent. She's no longer being proactive, she's going into an overconfidence abyss and taking everyone else down with her. She must be stopped!



Overconfidence adversely affects organizations as a whole when people don't seek information because they think they already know the answer, which leads to decisions being made with less than optimum knowledge. This applies to decisions at all levels of an organization, and frankly, in all aspects of our lives. It can prevent us from learning from our mistakes if we are convinced it won't happen again. When overconfidence is strong, it contributes to confirmation bias where, once again, we interpret new evidence as confirmation of our existing beliefs and ignore or minimize the rest.

Most people overestimate what they know. To illustrate this point, we will do a little self test on overconfidence.

Overconfidence Assessment
Instructions

- Take the overconfidence assessment on the next slide.
- You will need a blank sheet of paper and a pen.
- Bracket your answers within a range of values with 90% confidence.

At this point, stop and take no more than 3 or 4 minutes to go through the 10 question overconfidence assessment on the next slide. You will need a blank sheet of paper and a pen. You will be unlikely to know the exact answers, so bracket your answers within a range of values with 90% confidence. That is, when you look at your completed assessment, you should be 90% confident that the correct answer lies within the range you chose.

Overconfidence Assessment
Take the Assessment

	90% Confidence Range Low	High
1. Martin Luther King's age at death	_____	_____
2. Length of the Nile River	_____	_____
3. Number of countries that are members of OPEC	_____	_____
4. Number of books in the Old Testament	_____	_____
5. Diameter of the moon in miles	_____	_____
6. Weight of an empty Boeing 747 in pounds	_____	_____
7. Year in which Wolfgang Amadeus Mozart was born	_____	_____
8. Gestation period (in days) of an Asian elephant	_____	_____
9. Air distance from London to Tokyo	_____	_____
10. Deepest (known) point in the oceans (in feet)	_____	_____

From "Decision Traps"

When you are finished, go to the next slide to see the answers.

When you are finished, go to the next slide to see the answers.

Overconfidence Assessment
Answer Key

1. Martin Luther King's age at death
   39 years
2. Length of the Nile River
   4187 miles
3. Number of countries that are members of OPEC
   13 countries
4. Number of books in the Old Testament
   39 books
5. Diameter of the moon in miles
   2160 miles
6. Weight of an empty Boeing 747 in pounds
   390,000 pounds
7. Year in which Wolfgang Amadeus Mozart was born
   1756
8. Gestation period (in days) of an Asian elephant
   645 days
9. Air distance from London to Tokyo
   5959 miles
10. Deepest (known) point in the oceans (in feet)
    36,198 feet

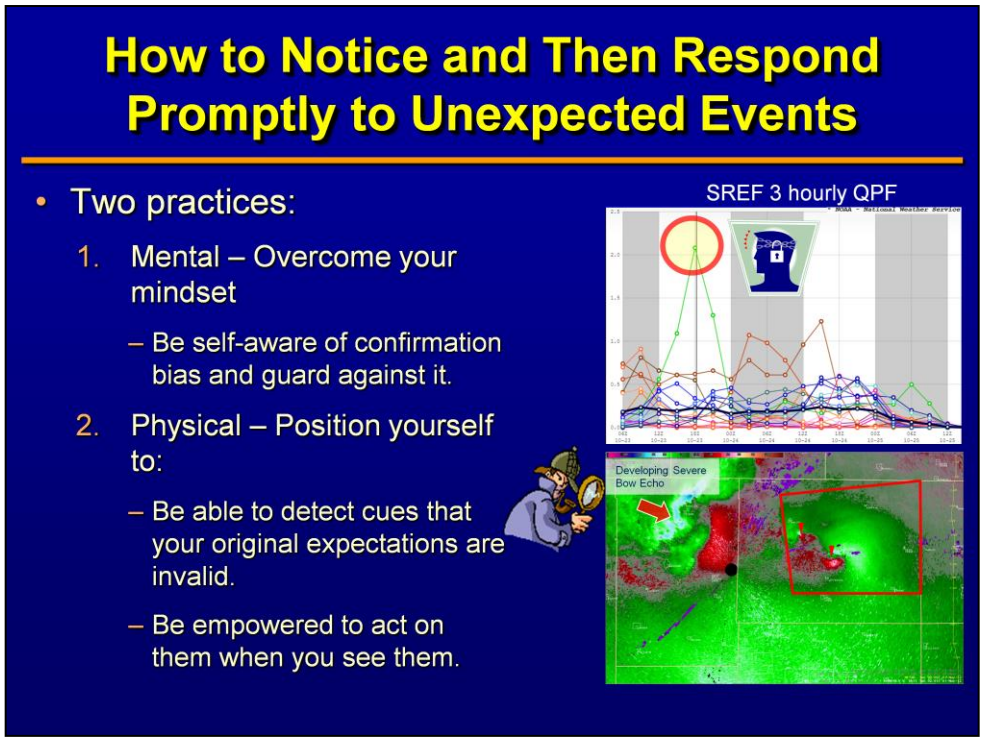
Here are the answers. How many did you get correct?

Overconfidence Assessment
Discussion

- Less than 1% of all people miss 0 or 1.
- Most managers miss between 4 and 7.
- Percentages change little with job-specific questions!

Having strengths is important. Knowing your limitations is equally important.

This pop quiz was NOT intended to test your knowledge of trivia, but to make you aware of the “bounds of your knowledge.” Less than 1% of all people miss 0 or 1. Most managers miss between 4 and 7. That is, they think their knowledge is better than it actually is. Amazingly, these percentages change little when people are asked questions specific to their own job!



There are two practices that can help you notice and then respond promptly to unexpected events. The first, and perhaps the most difficult practice is a mental one, where you must be self-aware of your own confirmation bias and guard against it. You have to let new information update your initial mindset. This is sort of like your own personal ensemble forecast. The outlier solutions are unlikely to occur, but you must be prepared for them just in case.

The second practice is physical; you must position yourself to be able to detect cues that your original expectations are invalid and be empowered to act on them when you see them. For example, you could be mentally prepared for a weakened dam to break and trigger massive flash flooding, but if your situational awareness display was turned off and your workstation not properly configured, you could not only miss the live local news coverage of the dam breaking, but also be unable to issue the Flash Flood Warning promptly.

Both of these practices, guarding against confirmation bias and being empowered to act quickly to new information, are what Highly Reliable Organizations do.

A Highly Reliable Organization (HRO) is an organization that has succeeded in avoiding catastrophes in an environment where normal accidents can be expected due to risk factors and complexity. Examples include: Nuclear carriers, hostage negotiators, air traffic control, emergency rooms, nuclear power plants, emergency operations centers, and yes, weather forecast offices.

HROs are not perfect (no organization is), but rather they have found a way to co-exist with all the variables in their complex, unstable, and to varying degrees, unknowable and unpredictable environment. They accept that at any point in time, they have an incomplete understanding of their system. This forces them to develop extensive mitigation plans because they know they will be needed eventually. It they can't mitigate an event, they will attempt to contain it with damage control. In spite of all of this, sometimes they will fail. When this happens, HROs focus on resilience which is a critical part of learning and moving forward.

Based on work done by Weick and Sutcliffe (2007), Highly Reliable Organizations (HROs) create a "collective state of mindfulness that produces an enhanced ability to discover and correct errors before they escalate into a crisis" and "prevent unwanted outcomes after an unexpected event has occurred."

They identified five principles of HROs that are responsible for creating a mindful infrastructure. The first three deal with anticipation which is the sensing of undesirable events early on and efforts to stop them from occurring. HROs are preoccupied with failure, reluctant to simplify for fear of missing important details, and sensitive to front line operations where the work gets done. Because not all undesirable events can be anticipated and planned for, the final two principles deal with containment which is the ability to contain and bounce back from unexpected events after they begin occur. HROs exhibit a relentless commitment to resilience and a deference to expertise which allows them to alter typical patterns of hierarchical deference as needed.

Let's discuss these five principles in more detail and strategies to instill these principles in your office's culture.

HRO Principle 1:
Preoccupation with Failure

- HRO culture encourages acknowledgement of error
  - There is no stigma
- HROs create a climate where people are:
  - Wary of success
  - Suspicious of quiet periods
  - Concerned about stability, routinization, and the lack of challenge and variety

"We're still just one missed event away from a warning disaster."

- NWS SOO

Highly Reliable Organizations are preoccupied with failure. They treat any failure (even a small one) as a symptom that something is wrong with the system. While this sounds negative, it's a characteristic that keeps them grounded. Success, especially recent success, breeds complacency. A mindful organization is continually updating its understanding. The moment we decide we have it all figured out, we stop looking for places to improve.

HROs also know the difference between being lucky and being good. We've all made the right decision for the wrong reason. We can either pat ourselves on the back and do nothing, or have the emotional maturity to say "We got lucky. That might not be the case next time." Even after a very successful warning event, this NWS SOO admonished the staff when he said "We're still just one missed event away from a warning disaster."

Acknowledgement of error is the first step on the road to improvement. The HRO culture encourages this; there's no stigma. Those who identify close calls and errors are viewed as being willing to help the organization improve.

HROs create a climate where people are wary of success, suspicious of quiet periods, and concerned about stability, routinization, and the lack of challenge

and variety that can predispose their organization to relax vigilance and sink into complacency that can lead to carelessness and error.

Let’s discuss some strategies to instill this principle into your office’s culture.

Preoccupation with Failure
Strategy: Pre-Mortem

- Breaks "groupthink" by increasing the likelihood the main threats are identified.
- Management can then analyze the magnitude and likelihood of each threat, and take preventative actions to prevent the failure.

📖 **Pre-Mortem** – A managerial strategy in which a manager imagines that a project or organization has failed, and then works backward to determine what potentially could lead to the failure.

One strategy to anticipate failures is to conduct a pre-mortem. A pre-mortem is a **managerial strategy developed by Klein Associates in which a manager imagines that a project or organization has failed, and then works backward to determine what potentially could lead to the failure of the project or organization.** The method breaks "groupthink" by increasing the likelihood the main threats are identified. Management can then analyze the magnitude and likelihood of each threat, and take preventative actions to protect the project or organization from failure.

Image a pre-mortem performed in 1962 by the Italian inventors of the world's first commercial personal computer musing about why their invention might fail. Examples of pre-mortems you might undertake at your office include: A missed warning, communication failure, incorrect response to your products, etc.

Preoccupation with Failure
Strategy: Devil's Inquisitor

- Questions are not threatening, but rather they point out flaws and inconsistencies.
- Works when all opinions are valued

🕮 **Devil's Inquisitor** – A person responsible for promoting the consideration of evidence outside the bounds of awareness of the other participants in order to reach the best possible outcome.

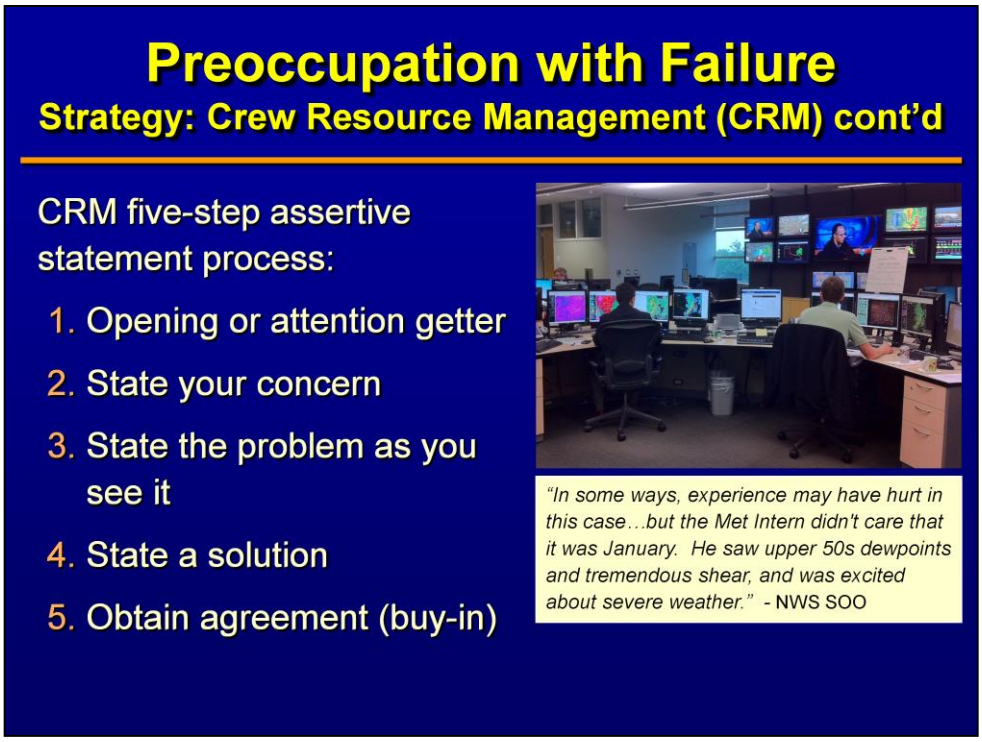
Another strategy you can employ to prevent failure is to appoint a "Devil's Inquisitor" who is a person responsible for promoting the consideration of evidence outside the bounds of awareness of the other participants in order to reach the best possible outcome. This is not the same as a devils advocate who plays an argumentative role, but more like a partner who is on the lookout for problems. Questions from a Devil's Inquisitor are not threatening, but rather they point out flaws and inconsistencies. A devil's inquisitor works when all opinions are valued, even those from the novice.

Preoccupation with Failure
Strategy: Crew Resource Management (CRM)

- Intended to foster a less authoritarian culture
- Co-pilots are encouraged to respectfully question captains if they observed them making mistakes.
- The crew works together under the assumption that any member can offer valued insight in spite of:
  - Age
  - Experience
  - Rank
  - Qualifications

📖 **Crew Resource Management (CRM)** – A set of training procedures for use in environments where human error can have devastating effects. CRM focuses on interpersonal communication, leadership, and decision making in the cockpit.

Another strategy to prevent failure can be borrowed from the aviation community. Crew Resource Management (CRM) is a set of training procedures for use in environments where human error can have devastating effects. Used primarily for improving air safety, CRM focuses on interpersonal communication, leadership, and decision making in the cockpit. The concept is intended to foster a less authoritarian culture, where co-pilots are encouraged to respectfully question captains if they observed them making mistakes. The crew works together under the assumption that any member, not just the pilot, can offer valued insight in spit of age, experience, rank, or qualifications.

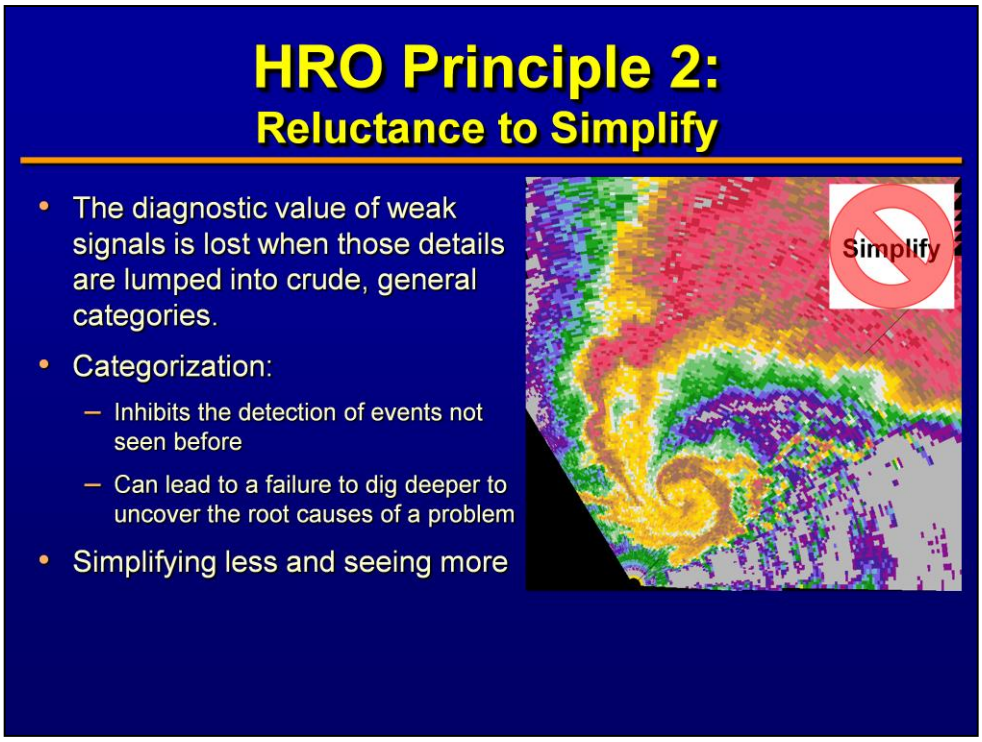


Crew Resource Management expert Todd Bishop developed a five-step assertive statement process that encompasses inquiry and advocacy steps: 1, Opening or attention getter, 2, State your concern, 3, State the problem as you see it, 4, State a solution, 5, Obtain agreement (or buy-in)

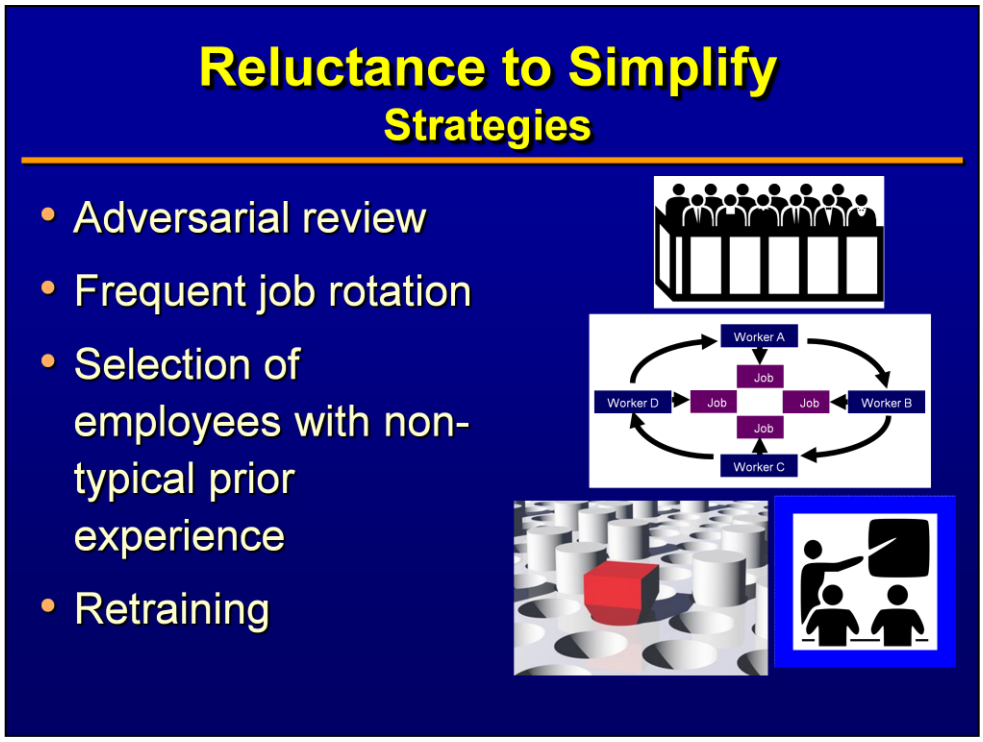
These are often difficult skills to master, as they may require significant changes in personal habits, interpersonal dynamics, and organizational culture. However, the basic concepts and ideology have proven successful with other related career fields including firefighting and healthcare.

In a National Weather Service Forecast Office, the Crew Resource Management concept can be illustrated by the interaction between an intern and lead forecaster "Bob" which began something like this: "Hey Bob, I'm concerned about the potential for severe storms. Even though it's January, visible satellite indicates towering cumulus are developing along the boundary in an environment with upper 50's dewpoints and very strong shear. Let's put someone on the warning desk. Does that sound good to you?" In the words of this SOO, "In some ways, experience may have hurt in this case…but the Met Intern didn't care that it was January. He saw upper 50s dewpoints and tremendous shear, and was excited about severe weather."

In a National Weather Service Office, a properly configured and monitored Situational Awareness Display (SAD) is another good strategy to prevent failure. It should not be turned off or ignored, even during "quiet weather" for risk of missing an important event such as this toxic spill from a train derailment which will require the office's decision support services. Populate your Situational Awareness Display in such as way that you can catch surprises such as this. Always expect that your expectations could be wrong. It's another way a preoccupation with failure can set you up for success.



Another principle of Highly Reliable Organizations is a reluctance to simplify. Knowing the world they face is complex, unstable, unknowable, and unpredictable, HROs position themselves to see as much as possible. They understand the diagnostic value of weak signals is lost when those details are lumped into crude, general categories. Categorization may improve coordination, but it inhibits the detection of events not seen before and can lead to a failure to dig deeper to uncover the root causes of a problem. A reluctance to simplify ensures a more complete and nuanced picture; simplifying less and seeing more. That's why HROs simplify slowly, reluctantly, mindfully.



HROs counteract tendencies to simplify assumptions, expectations, and analyses through practices such as: Adversarial review which is the process by which a proposal is reviewed by its author's adversaries, frequent job rotation, selection of employees with non-typical prior experience, and retraining which is to teach someone new skills, especially so that they can do a different job. You can follow these same strategies at your office.

HRO Principle 3:
Sensitivity to Operations

- HROs implement practices that help people develop a collective map of operations at any given moment.
- Everyone looks for "latent conditions" that may combine with other factors to result in a disaster.
- Leads to informed decision-making.

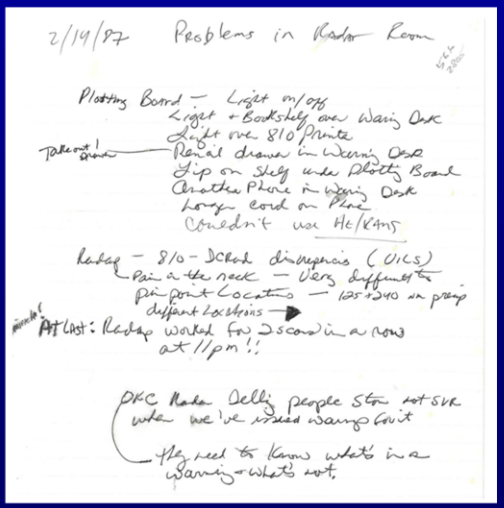
NWS WFO Brownsville staff 2014

Highly Reliable Organizations maintain a sensitivity to operations. They pay attention to relationships at the front line where the work gets done. Complex operational systems can be dynamic and nonlinear in nature. As a result it becomes difficult to know how one area of the organization's operations will act compared to another part. HROs combat this by implementing operating practices that help people develop a collective map of operations at any given moment.

In Highly Reliable Organizations, everyone, no matter his or her level, pays close attention to operations and is on the lookout for "latent conditions" that may combine with other factors to result in a disaster. There are no assumptions. Resources are deployed so that everyone can see what is happening, comprehend what it means, and project into the future what will happen. Root cause analysis can be employed after an event to reveal these latent conditions. This steady concentration on process leads to informed decision-making.

Sensitivity to Operations
Example

- Impediments to warning operations were addressed within 24 hours after the event.



When sensitivity to operations is a priority, management treats operations as gold by assuring it gets thorough and undivided attention. Here is an example. These crude notes were compiled by NWS Forecast Office management and staff shortly after a severe weather event. Impediments to warning operations were address by management within 24 hours after the event.

HRO Principle 4:
Commitment to Resilience

- Resilience involves three abilities:
  1. Absorb strain and preserve function despite adversity
  2. Maintain the ability to recover and return to service from unexpected and untoward events
  3. Learn and grow from previous episodes
- HROs develop resources to cope with and respond to change swiftly.

Apollo 13 crew after their "successful failure."

📖 **Resilience** – The capability of a system to maintain its function and structure in the face of internal and external changes and to degrade gracefully when it must.

Highly Reliable Organizations have a commitment to resilience which is the "capability of a system to maintain its function and structure in the face of internal and external changes and to degrade gracefully when it must." The trait could be described as relentlessness. Everyone maintains a deep knowledge of the system, the technology, their co-workers, and themselves as avenues for improvising and keeping the system functioning during high demand events. They might experience numerous failures, but it is their resilience and swift problem solving that prevents catastrophes. Think of how important that was during the Apollo 13 space mission to the moon as NASA engineers tried to figure out amongst other things, how to make a square peg fit into a round hole.

Resilience involves three abilities: 1, An ability to absorb strain and preserve functioning despite adversity, 2, An ability to recover and return to service back from unexpected and untoward events, and 3, An ability to learn and grow from previous episodes.

HROs committed to resilience assume that they will be surprised, so they concentrate on developing general resources to cope with and respond to change swiftly. This means that they work to develop knowledge, capability for swift feedback, faster learning, speed and accuracy of communication,

experimental variety, skill at recombination of existing response repertoires, and comfort with improvisation.

Let’s discuss a few strategies to instill this principle into your office’s culture.

Commitment to Resilience
Strategy: Allow Training to be Imperfect

- Develop training that is designed to build skill in mentally simulating operations, how they can unravel, and how they might be corrected.
- Insert problems and surprises
  - If things fail, then practice recovery

Resilience can be instilled by developing training that is designed to build people's skill in mentally simulating operations, how they can unravel, and how they might be corrected and develop people's capabilities to cope with a disturbance and learn from the experience. In short, allow your training environment (such as a WES simulation) to be imperfect by inserting problems and surprises. If things fail, then practice recovery. It can allow your warning operations team to strengthen their ability to cope with disturbances.

Commitment to Resilience
Strategy: Conceptual Slack

- Encourage "conceptual slack"
  - A divergence in organizational members' analytical perspectives about the organization's technology or production processes
  - A willingness to question what is happening
  - Greater usage of respectful interaction

Another strategy to build resilience is management practices and organizational norms that encourage "conceptual slack." Conceptual slack refers to a divergence in organizational members' analytical perspectives about the organization's technology or production processes, a willingness to question what is happening rather than feign understanding, and greater usage of respectful interaction to accelerate and enrich the exchange of information.

Commitment to Resilience
Be prepared to Take Action

- Act on what is happening now
  - You may never fully understand what went wrong and why, but you can take action to mitigate the impacts.

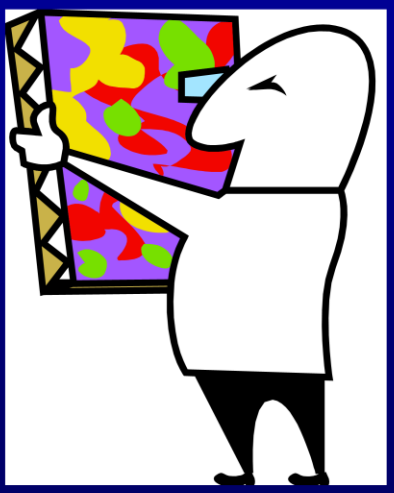
Convective Outlook

Current Radar

Finally, be prepared to take action on what is actually happening now before you understand why. While it would help to know why things are going wrong, it should not be a prerequisite for taking action. You may never fully understand what went wrong and why, but you can take action to mitigate the impacts. That's the difference between mindful and mindless!

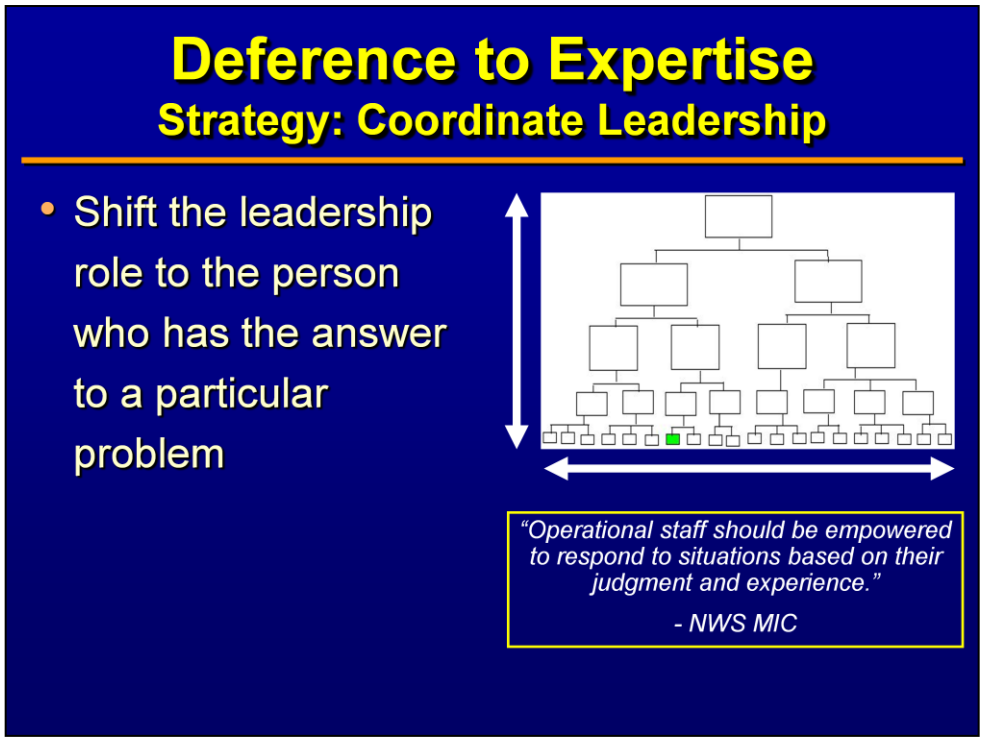
HRO Principle 5:
Deference to Expertise

- HROs have mastered the ability to alter typical patterns of hierarchical deference
- Expertise is not necessarily matched with hierarchical position



To be mindful in the face of unexpected operating contingencies, Highly Reliable Organizations have created a set of operating dynamics that are grounded in a deference to expertise. This process is less obvious than it sounds. HROs don't simply assign the problem to an expert and then move on. Hierarchical patterns of authority exist in HROs, as they do in most traditional organizations. What HROs have mastered is the ability to alter these typical patterns of deference, particularly as the tempo of operations increases and unexpected problems arise. Expertise is not necessarily matched with hierarchical position, so organizations that live or die by their hierarchy are seldom in a position to know all they can about a problem.

Let's discuss a few strategies to instill this principle into your office's culture.

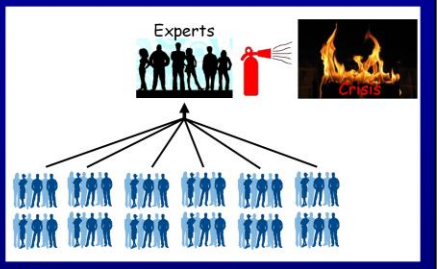


One way to instill a culture of deference to expertise is to practice "coordinate" leadership which is shifting the leadership role to the person who has the answer to a particular problem. Instead of the highest ranking or senior person being the answer source, the decision migrates both up and down through the organization in search of a person who has specific knowledge, expertise, and capabilities to address the problem. This means that anyone can be the leader in the area in which they have the expertise.

In a National Weather Service Forecast Office, this might mean the Meteorologist-in-Charge (MIC) defers to the Forecaster-in-Charge (FIC) during the severe weather shift who, for a particular problem, defers to the intern who had been recently trained. While this solution may seem obvious to most people, it is not a given in everyone's cultural experience. This quote from one National Weather Service MIC illustrates how coordinate leadership is encouraged at his office. Of course, the MIC will need to back that statement up!

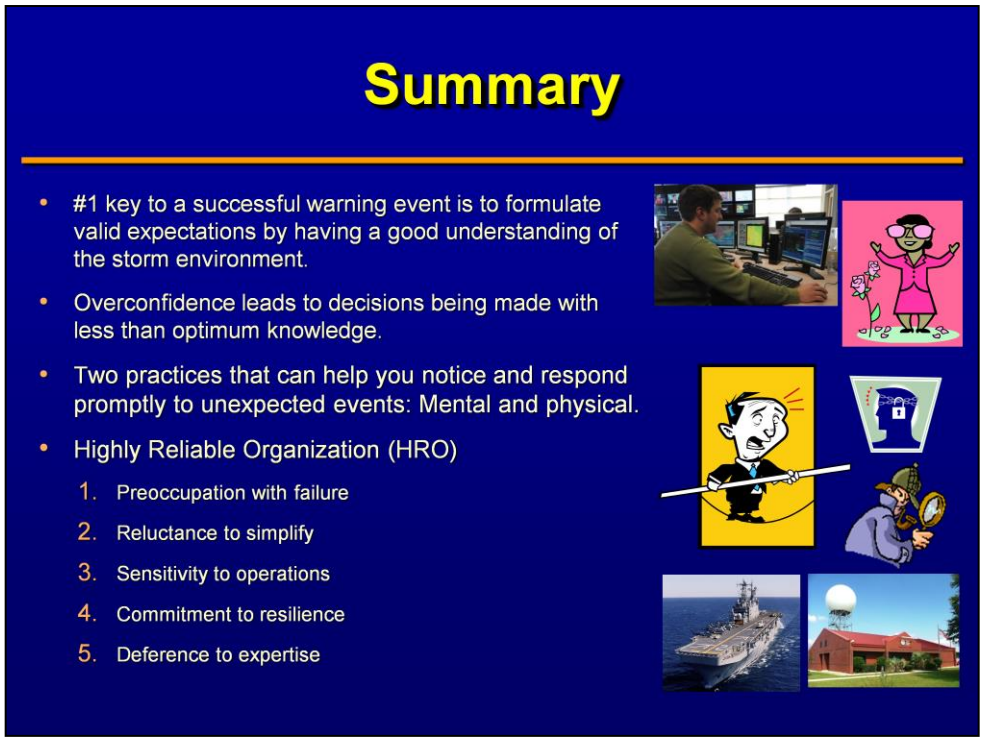
Deference to Expertise
Strategy: Heedful Interrelating

- Ad hoc networks provide expert problem solving
  - No formal status
  - Dissolve when crisis ends
  - Allow for rapid pooling of expertise



📖 **Heedful Interrelating -** A social process through which individual action contributes to a larger pattern of shared action.

Another way to instill the principle of deference to expertise is to encourage the practice of “heedful interrelating” which is a social process through which individual action contributes to a lager pattern of shared action. When an unexpected event occurs, HROs encourage “knowledgeable people [to] self-organize into ad hoc networks to provide expert problem solving. These networks have no formal status and dissolve as soon as a crisis is over. Such networks allow for rapid pooling of expertise to handle events that are impossible to anticipate.”



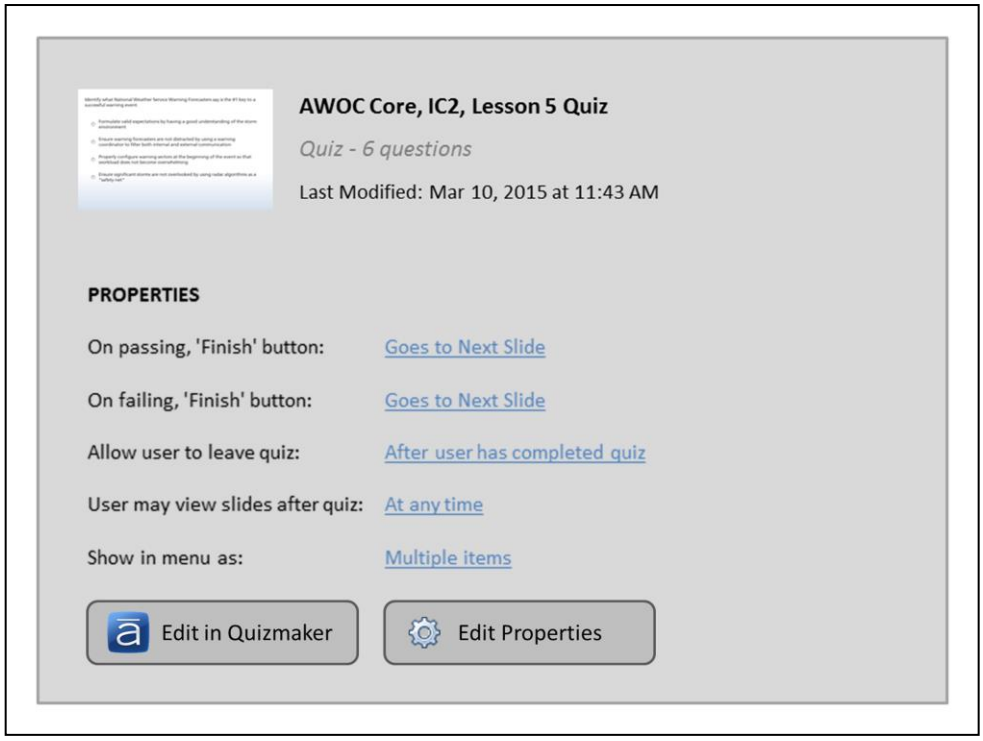
Now that we have finished discussing the principles of Highly Reliable Organizations, let's summarize the major points of this lesson.

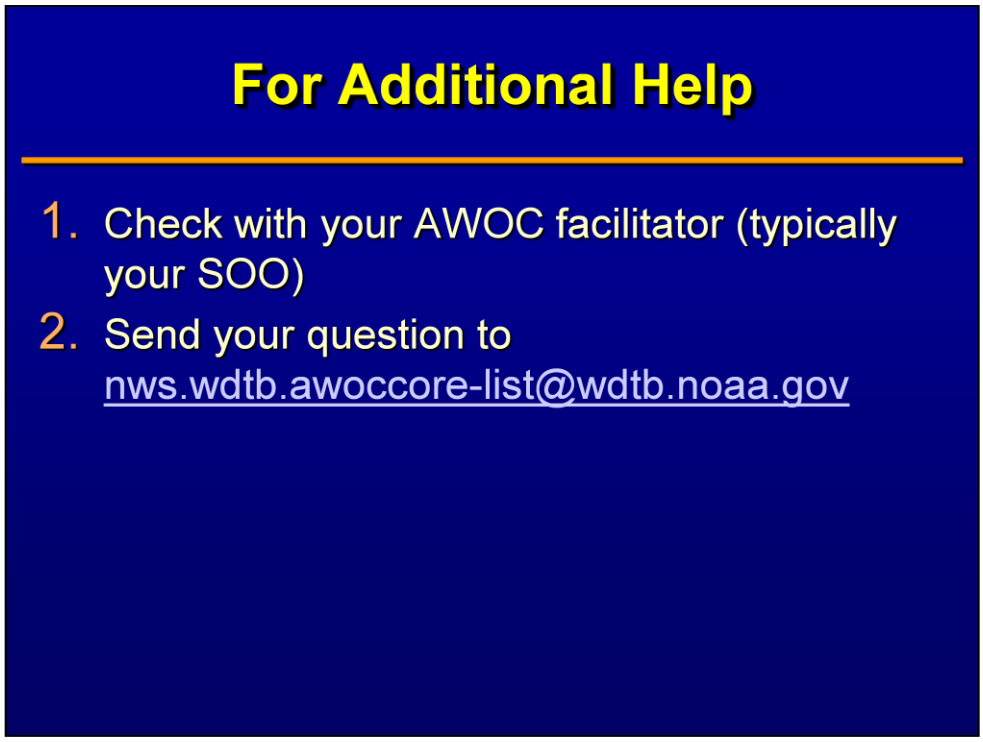
We learned a good way to prepare for the unexpected is to formulate valid expectations because it can shorten the time necessary to take the correct actions. In surveys, NWS warning forecasters say their #1 key to a successful warning event is to formulate valid expectations by having a good understanding of the storm environment. Invalid expectations are dangerous because they can lengthen the time necessary to take the proper actions when the unexpected occurs.

We also learned that overconfidence adversely affects organizations as a whole when people don't seek information because they think they already know the answer, which leads to decisions being made with less than optimum knowledge. It can prevent us from learning from our mistakes if we are convinced it won't happen again. When overconfidence is strong, it contributes to confirmation bias where, once again, we interpret new evidence as confirmation of our existing beliefs and ignore or minimize the rest.

There are two practices that can help you notice and then respond promptly to unexpected events. The first, and perhaps the most difficult is mental; that is changing your mindset. Be self aware of confirmation bias and guard against it. The second practice is physical; you must position yourself to be able to detect cues that your original expectations are invalid and be empowered to act on them when you see them.

Finally, we learned that a Highly Reliable Organization (HRO) is an organization that has succeeded in avoiding catastrophes in an environment where normal accidents can be expected due to risk factors and complexity. They have found a way to co-exist with all the variables in their complex, unstable, and to varying degrees, unknowable and unpredictable environment. They possess five principles that are responsible for creating their mindful infrastructure: Preoccupation with failure, reluctance to simplify, sensitivity to operations, commitment to resilience, and deference to expertise.


AWOC Core, IC2, Lesson 5 Quiz
Quiz - 6 questions
Last Modified: Mar 10, 2015 at 11:43 AM
PROPERTIES
On passing, 'Finish' button:
Goes to Next Slide
On failing, 'Finish' button:
Goes to Next Slide
Allow user to leave quiz:
After user has completed quiz
User may view slides after quiz:
At any time
Show in menu as:
Multiple items
Edit in Quizmaker
Edit Properties



For additional help check with your AWOC facilitator (typically your SOO) or send your questions to the AWOC Core listserve e-mail address here.

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Here are some references for you to investigate if you seek more information.

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And a few more references here.